Filed Via EFS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Appln No. 10/776,648 (Attorney's Docket No. DWNS.62631)	Filed: February 10, 2004 Confirmation No. 2005
Inventor: Huzeir Lekovic et al	Art Unit: 1711
TITLE: LOW DENSITY ACOUSTIC FOAMS BASED ON BIOPOLYMERS	Examiner: John M. Cooney

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUBSTITUTE APPEAL BRIEF

Sir:

On January 30, 2008, the Appellants filed a Notice of Appeal of a Final Rejection in the Office Action mailed November 01, 2007. The Appellants timely filed an Appeal Brief on May 7, 2008. This Brief is a Substitute Appeal Brief being filed in response to a Notice of Non-Compliant Appeal Brief mailed August 01, 2008. This appeal covers claims 1-25, and 48-54.

TABLE OF CONTENTS

I – Real Party In Interest

The real party in interest is The Dow Chemical Company.

II – Related Appeals and Interferences

There are no other related appeals or interferences.

III – Status of the Claims

Claims 1-25 and 48-54 are pending and have been rejected.

Claims 26-47 have been canceled.

Claims 1-25 and 48-54 are on appeal.

There are no other claims.

IV – Status of the Amendments

The Appellants, on March 7, 2008, filed an amendment under 37 C.F.R. 41.33(a) after the filing of a Notice of Appeal but before the filing of their first-filed appeal brief (filed May 7, 2008). In that amendment the Appellants tried to resolve some of the current issues on appeal. But unfortunately, as indicated in the Advisory Action dated March 26, 2008, that amendment was denied entry. Thus, each issue raised in the Final Office Action mailed November 01, 2007 needs to be considered by the Board. The attached claims reflect those in the application as of that date.

V – Summary of Claimed Subject Matter

A). Independent Claim 1

Independent claim 1 recites a method comprising mixing a polyisocyanate component with a polyol component in the presence of at least one catalyst for the reaction of a polyol or

water with a polyisocyanate and subjecting the mixture to conditions sufficient to cure to form a rigid polyurethane foam. *Page 2, lines 5-9 and 16-20; Page 3, lines 6-10 and 19-23; Page 19, lines 1-3; Page 20, lines 16-17.* The polyisocyanate component contains an isocyanate-terminated prepolymer made by reacting an excess of an organic polyisocyanate with (i) at least one polyol and (ii) at least one hydroxyl-functional acrylate. *Page 6, lines 14-17.* The polyol component comprises an effective amount of a blowing agent and isocyanate-reactive materials. *Page 14 line 10 – Page 15 line 9; Page 17, lines 11-21; Page 17 line 22 – Page 18 line 18.* These isocyanate-reactive materials comprise a hydrophobic polyol biopolymer comprising an ester of a fatty acid and glycerol, and further comprise a second polyol being a non-bioploymer. *Page 1, lines 3-6; Page 8 line 14 – Page 10 line 16; Page 14 line 10 – Page 17 line 10; Page 15, lines 8-9; Page 17 line 22 – Page 18 line 23; Table 1B (Pages 23-24, disclosing castor oil and soy oil P38N as being a biopolymer comprised of an ester of a fatty acid and glycerol); Table IV (Page 25, disclosing a polyol component comprising castor oil and soy oil P38N); Table VII (Page 27, disclosing a polyol component comprising castor oil and soy oil P38N); Table X (Page 28, disclosing a polyol component comprising castor oil and soy oil); and Table XXII (Page 34, disclosing a polyol component comprising castor oil).* The biopolymer is present in up to 40 wt% of the total polyol component, and the biopolymer being present in an amount less than the second polyol. *Page 8 lines 14 – Page 10 line 16; Page 14 line 10 – Page 17 line 10; Table 1B (Pages 23-24); Table IV (Page 25); Table VII (Page 27); Table X (Page 28); and Table XXII (Page 34).* The ratio of isocyanate groups in the polyisocyanate component to the number of isocyanate-reactive groups in the polyol component is less than 1:1, and the polyisocyanate component has a functionality of between about 2.0 and about 4.0. *Page 4, lines 7-9; Page 5, lines 18-21; Page 13, lines 19-23; Page 21, lines 12-23.*

B.) Independent Claim 10

Independent claim 10 calls for a product comprising a rigid polyurethane foam formed by mixing a polyisocyanate component with a polyol component in the presence of at least one catalyst for the reaction of a polyol or water with a polyisocyanate and subjecting the mixture to conditions sufficient to cure to form a rigid polyurethane foam having a decreased water absorption characteristic. *Page 2, lines 1-3, lines 5-9, and 16-20; Page 3, lines 6-10 and 19-23; Page 19, lines 1-3; Page 20, lines 16-17.* The polyisocyanate component comprises an isocyanate-terminated prepolymer made by reacting an excess of an organic polyisocyanate with (i) at least one polyol and (ii) at least one hydroxyl-functional acrylate. *Page 6, lines 14-17.* The polyol component comprises an effective amount of a blowing agent and isocyanate-reactive materials. *Page 14 line 10 – Page 15 line 9; Page 17, lines 11-21; Page 17 line 22 – Page 18 line 18.* These isocyanate-reactive materials include at least one hydrophobic biopolymer polyol comprising an ester of a fatty acid and glycerol, and further comprise a second polyol. *Page 8 line 14 – Page 10 line 16; Page 14 line 10 – Page 17 line 10; Page 15, lines 8-9; Page 17 line 22 – Page 18 line 23; Table 1B (Pages 23-24, disclosing castor oil and soy oil P38N as being a biopolymer comprised of an ester of a fatty acid and glycerol); Table IV (Page 25, disclosing a polyol component comprising castor oil and soy oil P38N); Table VII (Page 27, disclosing a polyol component comprising castor oil and soy oil P38N); Table X (Page 28, disclosing a polyol component comprising castor oil and soy oil); and Table XXII (Page 34, disclosing a polyol component comprising castor oil).* The biopolymer is present in an amount up to 40 wt% of the total polyol component, and the biopolymer being present in an amount less than the second polyol. *Page 8 lines 14 – Page 10 line 16; Page 14 line 10 – Page 17 line 10; Table 1B (Pages 23-24); Table IV (Page 25); Table VII (Page 27); Table X (Page 28); and Table XXII*

(Page 34). The second polyol comprises at least one of an alkyline glycol, glycoether, glycerine, trimethylolpropane, terniary amine-containing polyol, triisopropanolamine, polyether polyol or polyester polyol. *Page 9 lines 7-18; Page 9 line 19 – Page 10 line 12; Page 10, lines 13-16; Page 15, lines 8-9; Page 15 line 10 – Page 16 line 2; Page 16 line 20 – Page 17 line 10.* The ratio of isocyanate groups in the polyisocyanate component to the number of isocyanate-reactive groups in the polyol component is less than 1:1, and the polyisocyanate component has a functionality of between about 2.0 and about 4.0. *Page 4, lines 7-9; Page 5, lines 18-21; Page 13, lines 19-23; Page 21, lines 12-23.*

C. Independent Claim 19

Independent claim 19 calls for a product comprising a rigid polyurethane foam formed by mixing a polyisocyanate component with a polyol component in the presence of at least one catalyst for the reaction of a polyol or water with a polyisocyanate and subjecting the mixture to conditions sufficient to cure to form a rigid polyurethane foam having a bulk density in the range of about 2 to about 40 pounds per cubic foot. *Page 2, lines 5-9 and 16-20; Page 3, lines 6-10; Page 3 line 19 – Page 4 line 1; Page 5, lines 9-14; Page 19, lines 1-3; Page 20, lines 16-17; Page 22 lines 3-6.* The polyisocyanate component comprises an isocyanate-terminated prepolymer made by reacting an excess of an organic polyisocyanate with (i) at least one polyol and (ii) at least one hydroxyl-functional acrylate. *Page 6, lines 14-17.* The polyol component comprises an effective amount of a blowing agent and isocyanate-reactive materials. *Page 14 line 10 – Page 15 line 9; Page 17, lines 11-21; Page 17 line 22 – Page 18 line 18.* These isocyanate-reactive materials include at least one hydrophobic biopolymer polyol comprising an ester of a fatty acid and glycerol, and further comprise a second polyol being a non-bioploymer. *Page 1, lines 3-6; Page 8 line 14 – Page 10 line 16; Page 14 line 10 – Page 17 line 10; Page 15,*

lines 8-9; Page 17 line 22 – Page 18 line 23; Table 1B (Pages 23-24, disclosing castor oil and soy oil P38N as being a biopolymer comprised of an ester of a fatty acid and glycerol); Table IV (Page 25, disclosing a polyol component comprising castor oil and soy oil P38N); Table VII (Page 27, disclosing a polyol component comprising castor oil and soy oil P38N); Table X (Page 28, disclosing a polyol component comprising castor oil and soy oil); and Table XXII (Page 34, disclosing a polyol component castor oil). The biopolymer is present in up to 40 wt% of the total polyol component, and the biopolymer being present in an amount less than the second polyol. *Page 8 lines 14 – Page 10 line 16; Page 14 line 10 – Page 17 line 10; Table 1B (Pages 23-24); Table IV (Page 25); Table VII (Page 27); Table X (Page 28); and Table XXII (Page 34).* The ratio of isocyanate groups in the polyisocyanate component to the number of isocyanate-reactive groups in the polyol component is less than 1:1, the volume ratio of the polyisocyante component to the polyol component is about 1:1, and the polyisocyanate component has a functionality of between about 2.0 and about 4.0. *Page 4, lines 7-9; Page 5, lines 18-21; Page 13, lines 19-23; Page 21 line 12 – Page 22 line 3.*

VI – Grounds of Rejection to be Reviewed on Appeal

VII. A. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. (This ground of rejection refers to the first stated written description rejection found in the first full paragraph on page 2 of the Final Office Action mailed November 1, 2007.)

VII. B. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. (This ground of rejection refers to the second stated written description rejection found in the second full paragraph on page 2 of the Final Office Action mailed November 1, 2007.)

VII. C. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. (This ground of rejection refers to the third stated written description rejection found in the first full paragraph on page 3 of the Final Office Action mailed November 1, 2007.)

VII. D. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 112, second paragraph, as being indefinite.

VII. E. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Tsai (US 4,673,696) in view of Kurth et al. (US 2002/0121328).

VII. F. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Lekovic et al. (6,803,390) & (6,699,916), each taken alone, in view of Kurth et al.

VII. G. Whether claims 1-25 and 48-54 are unpatentable based on nonstatutory obviousness-type double patenting over claims 1-22 of Lekovic (6,803,390) and claims 1-19 of Lekovic (US 6,699,916), each taken alone, in view of Kurth et al.

VII – Argument

VII. A. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. (This ground of rejection refers to the first stated written description rejection found in the first full paragraph on page 2 of the Final Office Action mailed November 1, 2007.)

The Final Office Action set forth three written description rejections for claims 1-25 and 48-54. First, it argued that the originally filed application did not support the clam limitation calling for "a hydrophobic polyol biopolymer comprising an ester of a fatty acid and glycerol. . . that. . . is present in (an amount) up to 40 wt% of the total polyol component." *Final Office Action mailed November 01, 2007, page 2.*

THE APPELLANTS WERE IN POSSESSION OF THE CLAIMED POLYOL BIOPOLYMERS AND THE 40 WT.% RANGE AT THE TIME THE APPLICATION WAS FILED

The Appellants would like to direct the Board's attention to paragraph [0019], Table 1B in paragraph [0061], and Tables IV, VII, X, and XXII in paragraphs [0064], [0068], [0071], and [0085], respectively, to show support for the claim limitations calling for a "hydrophobic polyol

biopolymer comprising an ester of a fatty acid and glycerol ...that...is present in up to 40 wt% of the total polyol component."

First, in paragraph [0019], it is disclosed that the polyol component may be comprised of at least one biopolymer. Paragraph [0019] also states that the biopolymer is preferably hydrophobic, and that specific examples of such a biopolymer include castor oil, soybean oil, and combinations thereof. The last sentence of paragraph [0019] then states that "the biopolymer may be present in an amount up to about 40 weight percent, based on the total weight of the polyol component..." The Appellants believe this is sufficient to end the matter regarding written description support under 35 U.S.C. 112, first paragraph, for this rejection. But additional and more specific support will be presented so as to hopefully lay this rejection to rest.

In Table 1B, there is explicitly disclosed an exemplary list of materials that may be used to make a polyol component in accordance with paragraph [0019]. The specific polyol biopolymers disclosed in this table are castor oil and soyoil P38N. And both of these biopolymers are blatantly designated as biopolymers comprised of an ester of fatty acids and glycerol.

Then, in Tables IV, VII, X, and VVII, the Appellants disclose exemplary foam formulations using a polyol component made from the Table 1B materials. More specifically, Table IV discloses an exemplary polyol component that contains 20 wt. % castor oil and 19 wt. % soyoil P38N – thus providing the polyol component with a total biopolymer weight percentage of 39%. In other words, the polyol component of Table IV contains a hydrophobic biopolymer polyol (castor oil and soyoil P38N) that is present in up to 40 wt. % of the total polyol component. Tables VII, X, and VVII similarly disclose exemplary polyol components that satisfy the claimed subject matter at issue.

The Appellants thus contend that each of these disclosures, taken individually and collectively, sufficiently describes the added claim limitations called into question by the Final Office Action such that one of ordinary skill in the art would understand that the Appellants had possession of the subject matter at the time the application was filed. It is therefore respectfully requested that the Board reverse the Final Office Action's first stated 35 U.S.C. § 112, first paragraph, rejection of claims 1-25 and 48-54 for failing to comply with the written description requirement.

VII. B. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. (This ground of rejection refers to the second stated written description rejection found in the second full paragraph on page 2 of the Final Office Action mailed November 1, 2007.)

In the Final Office Action's second written description rejection, it argued that the originally filed application lacked support for the "biopolymer" claim limitation. *Final Office Action mailed November 1, 2007, page 2-3.*

THE APPELLANTS WERE IN POSSESSION OF THE BIOPOLYMER CLAIM LIMITATION AT THE TIME THE APPLICATION WAS FILED

The Appellants would like to direct the Board's attention primarily to paragraphs [0001], [0019], and [0061] to show support for the "biopolymer" claim limitation.

At the very outset of the application – in paragraph [0001] – it is stated that this invention relates to rigid polyurethane foams that contain "one or more hydrophobic biopolymers, such as castor oil, soybean oil, and the like..." Paragraph [0019] then slightly adds to paragraph [0001] stating that "it is preferred to use a polyol component that is comprised of at least one biopolymer" that "is preferably hydrophobic." Still further paragraph [0061], and most notably Table 1B, shows an exemplary list of materials that may be used to make such a polyol

component. And included in this list is castor oil and soyoil P38N, which are expressly identified as "biopolymers." All in all, the term "biopolymer(s)" is recited 7 times in the originally filed application to describe a class of materials that may be used to help fabricate the polyol component.

The Appellants therefore contend that the originally filed application conveys to one or ordinary skill in the art that the Appellants had possession of the "biopolymer" claim limitation added during prosecution. And as such, it is respectfully requested that the Board reverse the Final Office Action's second stated 35 U.S.C. § 112, first paragraph, rejection of claims 1-25 and 48-54 for failing to comply with the written description requirement.

VII. C. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. (This ground of rejection refers to the third stated written description rejection found in the first full paragraph on page 3 of the Final Office Action mailed November 1, 2007.)

Lastly, in the Final Office Action's third written description rejection, it argued that the originally filed application failed to support the "non-biopolymer" claim limitation. *Final Office Action mailed November 1, 2007, page 3.*

THE APPELLANTS WERE IN POSSESSION OF THE NON-BIOPOLYMER CLAIM LIMITATION AT THE TIME THE APPLICATION WAS FILED

A.) Independent Claims 1 and 19

As an initial matter, the Appellants believe this particular written description rejection is fundamentally improper because the Final Office Action failed to provide any evidence or reasoning to support this rejection. It is therefore tantamount to a per se prohibition of any negative limitation not expressly stated in the originally filed application. And the Board long

ago rejected the existence of any such per se prohibition. *See e.g., Ex parte Parks*, 30 USPQ2d 1234 (Bd. App. 1994).

What the Final Office Action should have done instead is determine whether the disclosure of the application as originally filed reasonably conveys to the skilled artisan that the inventor had possession, as of the filing date, of the later claimed subject matter irrespective of the presence or absence of literal support in the specification. *In re Kaslow*, 707 F.2d 1366, 1375, 217 U.S.P.Q. 1089, 1096 (Fed. Cir. 1983). And under this analysis, the Appellants contend that the added "non-biopolymer" claim limitation of independent claims 1 and 19, when taken in context with the surrounding claim language, is supported by the originally filed application such that it satisfies the written description requirement.

For instance, as can be gleaned from a cursory review of independent claims 1 and 19, the claim limitation "non-biopolymer" simply modifies the claim term "second polyol" (*the polyol component further comprising a second polyol being a non-biopolymer and...*). In other words, the non-biopolymer language does not open up the claims to the inclusion of all known materials that are not biopolymers. Instead, it performs the opposite function; that is, it limits the scope of the claim term "second polyol" to include only those polyols that are not considered biopolymers. And polyols that fit this characterization are well known to skilled artisans and sufficiently described in the originally filed application in paragraphs [0020], [0021] through [0023], [0031], [0034] and [0035]. For example, a non-exclusive sampling of these portions of the originally filed application includes, among others, alkylene glycols (paragraph [0021], note that paragraph [0033] states that the polyols of paragraph [0021] can be used for forming the polyol component as well), glycol ethers (paragraph [0021]), trimethylolpropane (paragraph [0021]), tertiary-amine containing polyols (paragraphs [0021],

[0034], and [0035]), polyether polyols (paragraph [0021]), and polyester polyols (paragraphs [0021] and [0022]). Furthermore, specific examples of these types of polyols are listed in Table 1B, which is located in paragraph [0061]. They include SPECFLEX NC 700, DABCO 33 LV, POLYG 76-120, VORANOL 391, and JEFFOL A-480, to name but a few examples.

It should thus be quite clear that the Appellants used the terminology "non-biopolymer" to help illuminate their intention that the claim term "second polyol" be restricted to conventional polyols – like those listed above – that are well known in the polyurethane industry. This position is fully supported in the originally filed disclosure; a disclosure that contemplates and expressly states that the polyol component may be comprised of a mixture or blend of two or more polyols with at least one polyol being a biopolymer. *See paragraphs [0019] and [0031].* Thus a skilled artisan acting reasonably would understand that if the polyol component comprises a mixture of two or more polyols, and some of the polyols in such a mixture are biopolymers, that the other polyols in the the polyol mixture are consequently non-biopolymers.

Accordingly, the Appellants respectfully request the Board to reverse the third stated 35 U.S.C. § 112, first paragraph, rejection of independent claims 1 and 19 for failing to comply with the written description requirement because the Final Office Action improperly applied a per se prohibition on negative claim terminology. And additionally, despite this improper rejection, the Appellants have shown considerable support in the originally filed application for the claimed phrase "a second polyol being a non-biopolymer..." Reversal of this written description rejection is also respectfully requested for dependent claims 2-9 & 48-54, which depend from independent claim 1, and dependent claims 20-25 & 54, which depend from independent claim 19.

B.) Independent Claim 10

Independent claim 10 and dependent claims 11-18 should not have been lumped together with claims 1-9 & 48-53 and 19-25 & 54 and rejected under this third stated written description requirement because no such "non-biopolymer" claim terminology is present in claim 10. The Board is therefore respectfully requested to reverse the third stated 35 U.S.C. § 112, first paragraph, rejection of claims 10-18 for failing to comply with the written description requirement.

VII. D. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 1-25 and 48-54 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for, according to the Final Office Action, "the omission of the terminology 'an amount' from Applicants' claimed polyol range..." *Final Office Action mailed November 01, 2007, page 4.* Because these rejections are not properly supported by factual findings, the Appellants respectfully request that the Board reverse the Final Office Action's 35 U.S.C. § 112, second paragraph, indefiniteness rejections.

THE APPELLANTS' CLAIMS ARE NOT INSOLUBLY AMBIGUOUS

A.) Independent Claims 1 and 19

The Appellants contend that the Final Office Action failed to explain, in a manner commensurate with its burden, how the omission of the terminology "an amount" renders independent claims 1 and 19 not amenable to construction or insolubly ambiguous. *See Young v. Lumenis*, 492 F.3d 1336, 1346 (Fed. Cir. 2007) ("Claims are considered indefinite when 'they are not amenable to construction or are insolubly ambiguous...Thus, the definiteness of claim terms depends on whether those terms can be given any reasonable meaning'"); *See Aero*

Products v. Intex Recreation, 466 F.3d 1000, 1016 (Fed. Cir. 2006) ("If a claim is amenable to construction, 'even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree,' the claim is not indefinite.").

In short, the Final Office Action is simply devoid of any factual support for its indefiniteness rejections. Moreover the phrase "wherein the biopolymer is present in up to 40 wt. % of the total polyol component..." is fairly clear so as delineate the scope of the invention claimed in independent claims 1 and 19. It is therefore respectfully requested that the Board reverse the Final Office Actions 35 U.S.C. § 112, second paragraph, rejections of independent claims 1 and 19. Reversal of this indefiniteness rejection is also respectfully requested for dependent claims 2-9 & 48-54, which depend from independent claim 1, and dependent claims 20-25 & 54, which depend from independent claim 19.

B.) Independent Claim 10

Independent claim 10 and dependent claims 11-18 should not have been lumped together with claims 1-9 & 48-53 and 19-25 & 54 and rejected for indefiniteness due to an omission of the claim terminology "an amount." This is because independent claim 10 expressly recites the disputed "an amount" terminology. The Board is therefore respectfully requested to reverse this 35 U.S.C. § 112, second paragraph, rejection of claims 10-18.

VII. E. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Tsai (US 4,673,696) in view of Kurth et al. (US 2002/0121328).

The Appellants contend that a prima facie case of obviousness has not been established for claims 1-25 and 48-54 over Tsai in view of Kurth for at least the following reasons. The Appellants therefore respectfully request that the Board reverse the Final Office Action's 35

U.S.C. § 103(a) rejections based on this unsupported and arguably improper combination of teachings.

1. NO REASON HAS BEEN PROVIDED AS TO WHY A SKILLED ARTISAN WOULD COMBINE THE TEACHINGS OF TSAI AND KURTH IN THE MANNER SET FORTH IN APPELLANTS' CLAIMS

In declaring claims to an invention unpatentable for obviousness, a rejection is required to do more than just locate each claim limitation in the prior art. More specifically, the rejection must provide a clearly articulated reason with some rational underpinning as to why a skilled artisan, when viewing the references for all they teach or do not teach, would have found the claimed invention obvious at the time the invention was made. *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007), 82 USPQ 2d 1385, 1396; MPEP 2141 at 119.

No such reasoning has been provided that supports the proposed combination of the teachings of Tsai and Kurth to render independent claims 1, 10, and 19 and their dependent claims obvious. Instead only conculusory statements of obviousness were advanced. For example, in the Final Office Action, the entire rational for combining the teachings of Tsai and Kurth reads:

> Accordingly, it would have been obvious to one having ordinary skill in the art to have employed the biobased polyols of Kurth et al. as the hydrophobic polyol in the work-up of the products of Tsai for the purpose of employing renewable reactants in deriving useful products in order to arrive at the products and processes of applicants claims with the expectation of success in the absence of a showing of new or unexpected results. *Final Office Action dated November 1, 2007, page 5-6.*

The Appellants can derive no specified explanation from this statement as to why a skilled artisan would combine the teachings of Tsai and Kurth in the manner set forth in

independent claims 1, 10, and 19, or even identify what teachings in Tsai and Kurth that the Final Office Action is proposing to combine. Rather, the Appellants have had to guess throughout prosecution as to the motives behind this combination. The statement that "*employing renewable reactants in deriving useful products in order to arrive at the products and processes of applicants claims with the expectation of success*" cannot be considered anything more than a conculsory statement. Furthermore this statement all but assumes an expectation of success while failing to provide even a hint of support. To the Appellants it seems the Examiner – based on the cryptic statements in the Final Office Action – is basing his obviousness determination on the fact that both Tsai and Kurth relate to polyurethane chemistry. And a reasoning of this scope is too generalized and broad-sweeping and should not be allowed to sustain the obviousness rejections here. In short, there are serious defects in the reasoning relied upon to combine the teachings of Tsai and Kurth. More is required if the Appellants are to receive a full and fair shake in any patentability determination.

For this reason, a prima facie case of obviousness has not been established for claims 1-25 and 48-54. The Board is therefore respectfully requested to reverse the Final Office Action's finding of obviousness of these claims over Tsai and Kurth.

2. CLAIM LIMITATIONS NOT TAUGHT OR SUGGESTED BY TSAI OR KURTH WERE IMPROPERLY IGNORED

In addition to the serious deficiencies as to whether the teachings of Tsai and Kurth can even be combined, the Final Office has repeatedly failed to identify exactly where Tsai or Kurth teaches or suggests the claim limitation recited in independent claims 1, 10, and 19 that requires the "the polyol component comprises…isocyanate-reactive materials comprising **a hydrophobic**

polyol biopolymer...present in an amount up to 40wt% of the total polyol component..." After all the burden is on the Final Office Action to make such a showing.

Instead, as to the hydrophobicity of the biopolymer, the Final Office Action states that "such a characteristic is intrinsic to the oil materials of Kurth et al. which have not had additional -OH groups added thereto." *Final Office Action Mailed November 1, 2007, Page 7.* And as to the wt% range claimed, the Final Office Action states that "[a]s to the amounts of the respective polyols components, it has long been held that where the general conditions of the claims are disclosed in the prior art, discovering the optimal or workable ranges involves only routine skill in the art" *Id.*, and that "[v]ariation in the amounts of these respective reactive components for the purpose of controlling their reactive effects would have been within the skill of the ordinary practitioner in the art with the expectation of success..." *Id.*

The Appellants contend that, once again, the Final Office Action retreated to the use generalized and conclusory statements as opposed to making a specific showing as to where these claim limitations can be found in either Tsai or Kurth. And even though Appellants are not required do so they would like to show the Board that these claim limitations are not found in the prior art references cited against the Appellants.

First, Tsai teaches how to stabilize a blend of a long-chain polyol and a short-chain diol by adding to the blend a compatibilizing amount of an ethylnically unsaturated esterol. *Col. 1 lines 63 – 68; Col. 2 lines 33 – 35.* The only discussion in Tsai regarding the long-chain polyols states that the polyols typically are polyoxyalkylene polyols with an average molecular weight ranging from between about 1,000 and 20, 000 and include diols, triols, tetraols, and the like, and that the majority of oxyalkylene groups are oxyehtylene or oxypropylene groups including mixtures thereof. *Col. 4 lines 17-25.* There is no express or implied disclosure that would

convey to one or ordinary skill in the art that a hydrophobic polyol biopolymer may be substituted for the long-chain polyols recited with a reasonable expectation of success. Thus, Tsai fails to teach or suggest the pertinent claim limitation.

And second, Kurth teaches how to make and use a vegetable oil based polyol of increased and selectable functionality for manufacturing polyurethane elastomers and foams. *Page 2, paragraph [0012].* That is, Kurth teaches to transform a vegetable oil into a man-made vegetable oil based polyol with increased functionality. Kurth also teaches that the vegetable oil based polyol is a reaction product formed by a two-stage transesterification process that reacts 1.) the product of a multifunctional alcohol and a multifunctional component, and 2.) a vegetable oil. *Page 3, paragraph [0023]-[0026].* Further increases in functionality can be made in addition to the two-stage transesterification process by propoxylation, butyoxylation, or ethoxylation. *Id. at [0027].* As such Kurth teaches to add -OH groups (adding hydroxyl groups increases functionality) to a vegetable oil through this two-stage process which, in turn, renders the man-modified vegetable oil more functional and also more hydrophilic (-OH groups are very polar and therefore water attractive). As a result, Kurth fails to teach or suggest the "hydrophobic biopolymer" claim limitation.

The Appellants also find error in the Final Office Action's statement that the "hydrophobic" claim limitation at issue is disclosed in Kurth because of an "intrinsic characteristic" of the oil materials that have not had -OH groups added thereto. To the Appellants this means the Final Office Action is relying on a starting material to the two-stage transesterification process – notably vegetable oil that has not yet taken part in the process – to supply the hydrophobic polyol bioploymer limitation of the Appellants' claims. This is improper. Kurth teaches that significant modifications are made to vegetable oil through the

two-stage transesterification process in order to form the vegetable oil based polyol of increased functionality that is ultimately used to make the polyurethane product. A not-yet-modified starting material can not meet the limitation in the Appellants' claims that calls for a "polyol component that comprises isocyanate-reactive materials comprising a hydrophobic polyol biopolymer for reacting with a polyisocyanate component under conditions sufficient to cure to form a rigid polyurethane foam." To hold otherwise completely ignores the teachings of Kurth as a whole; in particular teaching away statements that stress the inability of the vegetable oil starting material to adequately function as a polyol:

> The difficulties in the past that occurred due to the use of vegetable oil as the polyols to produce a urethane product include the inability to regulate the functionality of the polyol resulting in variations in urethane product where the industry demands relatively strict specifications be met and the fact that urethane products, in the past, outperformed vegetable oils based on products in quality tests, such as carpet backing pulling tests. *Page 2, paragraph [0011].*

And finally, apart from not teaching or suggesting a hydrophobic polyol biopolymer, neither Tsai nor Kurth teaches or suggests a hydrophobic polyol biopolymer that "is present in up to 40wt% of the total polyol component" and also "present in an amount less than the second polyol" as called for in independent claims 1, 10, and 19 and described in the examples beginning at paragraph [0061]. In contrast each of the examples disclosed in Kurth call for the transesterified polyol – which, again, the Appellants dispute is even a hydrophobic polyol biopolymer – to be present in a greater weight percent than all other polyols.

Therefore, a prima facie case of obviousness has not been established for claims 1-25 and 48-54 because the Final Office Action's burden to show the Appellants where each claim limitation can be found in the prior art has not been carried. The Board is therefore respectfully

requested to reverse the Final Office Action's finding of obviousness of these claims over Tsai and Kurth.

VII. F. Whether claims 1-25 and 48-54 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Lekovic et al. (6,803,390) & (6,699,916), each taken alone, in view of Kurth et al.

The Appellants also contend that a prima facie case of obviousness has not been established for claims 1-25 and 48-54 over either Lekovic reference in view of Kurth for at least the following reasons. The Appellants therefore respectfully request that the Board reverse the Final Office Action's 35 U.S.C. § 103(a) rejections based on this unsupported and arguably improper combination of teachings.

COMBINING THE TEACHINGS OF EITHER LEKOVIC PATENT WITH KURTH IS INSUFFICIENT TO ESTABLISH A PRIMA FACIE CASE OF OBVIOUSNESS FOR THE SAME REASONS THAT THE COMINATION OF TSAI AND KURTH WAS INSUFFICIENT

First, no reason has been provided that supports combining the teachings of either Lekovic reference with Kurth, as proposed, to render independent claims 1, 10, and 19 and their dependent claims obvious. The Final Office Action admits that neither Lekovic patent discloses hydrophobic biopolymers. *Final Office Action Mailed November 1, 2007, Page 9.* So it returns to Kurth to supply this missing limitation. *Id.* But similar to before, only a factually empty and unsupported conclusory statement has been advanced in an attempt to justify this combination:

> Accordingly, it would have been obvious for one having ordinary skill in the art to have employed the biobased polyols of Kurth et al. as the hydrophobic polyol in the work-up of the products of the Lekovic et al. patents for the purpose of employing renewable reactants in deriving useful products in order to arrive at the products and processes of applicants' claims with the expectation of success in the absence of showing of

> new or unexpected results. *Final Office Action dated November 1, 2007, page 9.*

There is simply no explanation given as to what exactly in the Lekovic patents or the Kurth publication would lead one of ordinary skill in the art to combine their teachings. And there is no discussion as to why a person of ordinary skill in the art would have an expectation of success as so confidently stated. The Final Office Action basically relies on the fact that each of these references relates to polyurethane chemistry as a basis to support their combination. The Appellants feel that, as previously stated, such generalized statements without more fail to meet the requirements of *KSR* that call for an obviousness rejection to provide a clearly articulated reason with some rational underpinning as to why a skilled artisan, when viewing the references for all they teach or do not teach, would have found the claimed invention obvious at the time it was made. No prima facie case of obvious has been established for claims 1-25 and 48-54 over the Lekovic patents in view of Kurth.

Secondly, and in addition to the fatal deficiencies just discussed, the Final Office Action has failed to identify exactly where the Lekovic patents or Kurth teach or suggest the claim limitation recited in independent claims 1, 10, and 19 that requires the "the polyol component comprises...isocyanate-reactive materials comprising **a hydrophobic biopolymer...present in an amount up to 40wt% of the total polyol component**..." Instead it directs the Appellants to arguments made in the context of the combination of Tsai and Kurth:

> Applicants' arguments are similar to those made in addressing the rejection over Tsai in view of Kurth et al. set for above, and examiner holds his positions set forth above to apply here as well. *Final Office Action Mailed November 01, 2007, page 10.*

In other words the Final Office Action made no attempt to locate the disputed claim limitation in either of the Lekovic patents or in Kurth. And again, while the Appellants are not required to do so, they will attempt to show the Board that this disputed claim limitation is not taught or disclosed in either of the Lekovic patents. Kurth need not be revisited here as the Appellants have already explained the relevant deficiencies of that reference.

The '916 Lekovic patent (US 6,699,916) teaches a rigid polyurethane system that can be applied at lower volume ratios and which provides stable, rigid foam. *Col. 1 lines 40-43.* The polyol component utilized may be one or more polyols. *Col. 7 line 26.* The '916 patent envisions the use many kinds of polyols of which none are hydrophobic biopolymers. *See Col. 4 lines 9-65; Col. 7 lines 26-50; and Col. 8 lines 17-67.*

The '390 Lekovic patent (US 6,803,390) teaches a rigid polyurethane system that can be applied at low volume ratios and can be applied at lower operating temperatures. *Col. 1 lines 41-44.* The polyol component includes a polyol or a mixture of polyols. *Col. 6 lines 15-16.* Many different polyols may be used to make the polyol component and, as before, none of the polyols disclosed are hydrophobic biopolymers. *See Col. 3 line 33-Col. 4 line 23; Col. 6 lines 15-45.*

And finally, just as before, neither of the two Lekovic patents nor Kurth teaches or suggests a hydrophobic polyol biopolymer that "is present in up to 40wt% of the total polyol component" and also "present in an amount less than the second polyol" as called for in independent claims 1, 10, and 19 and described in the examples beginning at paragraph [0061].

Thus, a prima facie case of obviousness has not been established for claims 1-25 and 48-54. The Board is therefore respectfully requested to reverse the Final Office Action's finding of obviousness of these claims over Lekovic (6,803,390) & (6,699,916), each taken alone, in view of Kurth.

VII. G. Whether claims 1-25 and 48-54 are unpatentable based on nonstatutory obviousness-type double patenting over claims 1-22 of Lekovic (6,803,390) and claims 1-19 of Lekovic (US 6,699,916), each taken alone, in view of Kurth et al.

The rejection of claims 1-25 and 48-54 for nonstatutory obviousness type double patenting is improper for at least the following reasons. The Appellants therefore respectfully request that the Board reverse the Final Office Action's double patenting rejection.

THE CLAIMS AT ISSUE IN THIS APPLICATION ARE PATENTABLY DISTINCT FROM THOSE IN EITHER LEKOVIC PATENT

The Appellants contend that the issuance of the claims in this application would not provide an unjustified or improper timewise extension of the patent terms of the Lekovic patents; rather they are patentably distinct.

For example, contrary to claims 1-25 and 48-54 of this application, none of the Lekovic claims call for a polyol component that comprises a "hydrophobic polyol biopolymer" or an obvious variation thereof. Nor do any of the claims of the Lekovic patents, in view of Kurth, suggest that the biopolymer be present in up to 40 weight percent of the total polyol component as called for in independent claims 1, 10, and 19. Instead claims 1-25 and 48-54 of this application recite certain specified materials that are used to form the polyol component that, in turn, is used to make rigid polyurethane foams.

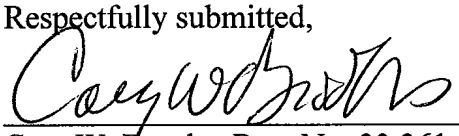
Thus the Final Office Action has not shown how issuing claims 1-25 and 48-54 of this application will unjustly extend the patent term of either Lekovic patent.

CONCLUSION

The Board should reverse each of the rejections of claims 1-25 and 48-54. First, the Final Office Action's written description rejections are not supported by any factual reasoning and therefore have not established a prima facie case of noncompliance with the written description

requirement. Secondly, in making its indefiniteness rejections, the Final Office Action failed to communicate any plausible explanation as to how the Appellants' claims are insolubly ambiguous or unconstruable. Thirdly, the Final Office Action has not met its burden in establishing a prima facie case of obviousness. More specifically, the Final Office Action has not articulated any plausible reason supported by some rational underpinning as to why a person of ordinary skill in the art would combine the prior art references and arrive at the presently claimed subject matter. Nor has the Final Office Action identified each claim limitation in the prior art. Lastly, the Final Office Action has failed to show that the Appellants' claims now under appeal are not patentably distinct from the claims of the Lekovic patents. Thus, in view of the above arguments and remarks, the Appellants respectfully request the reversal of the rejection of claims 1-25, and 48-54.

Respectfully submitted,



Cary W. Brooks, Reg. No. 33,361
Reising, Ethington, Barnes, Kisselle, P.C.
P. O. Box 4390
Troy, MI 48099-4390
(248) 689-3500

Dated: August 29, 2008

VIII – Claims Appendix

1. A method comprising mixing a polyisocyanate component with a polyol component in the presence of at least one catalyst for the reaction of a polyol or water with a polyisocyanate and subjecting the mixture to conditions sufficient to cure to form a rigid polyurethane foam wherein (a) the polyisocyanate component contains an isocyanate-terminated prepolymer made by reacting an excess of an organic polyisocyante with (i) at least one polyol and (ii) at least one hydroxyl-functional acrylate, (b) the polyol component comprises an effective amount of a blowing agent and isocyanate-reactive materials comprising a hydrophobic polyol biopolymer comprising an ester of a fatty acid and glycerol, the polyol component further comprising a second polyol being a non-biopolymer and wherein the biopolymer is present in up to 40 wt% of the total polyol component, and the biopolymer being present in an amount less than the second polyol; (c) the ratio of isocyanate groups in the polyisocyanate component to the number of isocyanate-reactive groups in the polyol component is less than 1:1; and (d) the polyisocyanate component has a functionality of between about 2.0 and about 4.0.

2. The invention according to claim 1, wherein the polyurethane foam has a bulk density in the range of about 2 to about 40 pounds per cubic foot.

3. The invention according to claim 1, wherein the volume ratio of the polyisocyanate component to polyol component is about 1:1.

4. The invention according to claim 1, wherein the hydroxy-functional acrylate is a methacrylate.

5. The invention according to claim 1, wherein at least one polyol in the polyol component contains a tertiary amine group.

6. The invention according to claim 1, wherein the catalyst includes a reactive amine catalyst.

7. The invention according to claim 1, wherein the blowing agent is water or a chemical blowing agent that releases CO_2.

8. The invention according to claim 1, wherein the organic polyisocyanate is MDI or a polymeric MDI.

9. The invention according to claim 1, wherein the foam is formed into an automotive component.

10. A product comprising a rigid polyurethane foam formed by mixing a polyisocyanate component with a polyol component in the presence of at least one catalyst for the reaction of a polyol or water with a polyisocyanate and subjecting the mixture to conditions

sufficient to cure to form a rigid polyurethane foam having a decreased water absorption characteristic, wherein (a) the polyisocyanate component comprises an isocyanate-terminated prepolymer made by reacting an excess of an organic polyisocyanate with (i) at least one polyol and (ii) at least one hydroxyl-functional acrylate, (b) the polyol component contains an effective amount of a blowing agent and isocyanate-reactive materials that include at least one hydrophobic biopolymer polyol comprising an ester of a fatty acid and glycerol, the polyol component further comprising a second polyol and wherein the biopolymer is present in an amount up to 40 wt% of the total polyol component, and the biopolymer being present in an amount less than the second polyol, and wherein the second polyol comprises at least one of an alkyline glycol, glycoether, glycerine, trimethylolpropane, terniary amine-containing polyol, triisopropanolamine, polyether polyol or polyester polyol; (c) the ratio of isocyanate groups in the polyisocyanate component to the number of isocyanate-reactive groups in the polyol component is less than 1:1; and (d) the polyisocyanate component has a functionality of between about 2.0 and about 4.0.

11. The invention according to claim 10, wherein the polyurethane foam has a bulk density in the range of about 2 to about 40 pounds per cubic foot.

12. The invention according to claim 10, wherein the volume ratio of the polyisocyanate component to polyol component is about 1:1.

13. The invention according to claim 10, wherein the hydroxy-functional acrylate is a methacrylate.

14. The invention according to claim 10, wherein at least one ploy ol in the polyol component contains a tertiary amine group.

15. The invention according to claim 10, wherein the catalyst includes a reactive amine catalyst.

16. The invention according to claim 10, wherein the blowing agent is water or a chemical blowing agent that releases CO_2.

17. The invention according to claim 10, wherein the organic polyisocyanate is MDI or a polymeric MDI.

18. The invention according to claim 10, wherein the foam is formed into an automotive component.

19. A product comprising a rigid polyurethane foam formed by mixing a polyisocyanate component with a polyol component in the presence of at least one catalyst for the reaction of a ploy ol or water with a polyisocyanate and subjecting the mixture to conditions

sufficient to cure to form a rigid polyurethane foam having a bulk density in the range of about 2 to about 40 pounds per cubic foot, wherein (a) the polyisocyanate component comprises an isocyanate-terminated prepolymer made by reacting an excess of an organic polyisocyanate with (i) at least one polyol and (ii) at least one hydroxy-functional acrylate, (b) the polyol component contains an effective amount of a blowing agent and isocyanate-reactive materials that include at least one hydrophobic biopolymer polyol comprising an ester of a fatty acid and glycerol, the polyol component further comprising a second polyol being a non-biopolymer and wherein the biopolymer is present in up to 40 wt% of the total polyol component, and the biopolymer being present in an amount less than the second polyol; (c) the ratio of isocyanate groups in the polyisocyanate component to the number of isocyanate-reactive groups in the polyol component is less than 1:1, wherein the volume ratio of the polyisocyanate component to polyol component is about 1:1; and (d) the polyisocyanate component has a functionality of between about 2.0 and about 4.0.

20. The invention according to claim 19, wherein the hydroxy-functional acrylate is a methacrylate.

21. The invention according to claim 19, wherein at least one polyol in the polyol component contains a tertiary amine group.

22. The invention according to claim 19, wherein the catalyst includes a reactive amine catalyst.

23. The invention according to claim 19, wherein the blowing agent is water or a chemical blowing agent that releases CO_2.

24. The invention according to claim 19, wherein the organic polyisocyanate is MDI or a polymeric MDI.

25. The invention according to claim 19, wherein the foam is formed into an automotive component.

48. The invention according to claim 1 wherein the ester is from at least one of castor oil or soybean oil.

49. The invention according to claim 1 further comprising using the rigid polyurethane foam as a reinforcing foam or crash support foam in an automobile.

50. The invention according to claim 1 further comprising using the rigid polyurethane foam to make a headliner, doorframe, pillar or rocker panel in an automobile.

51. A method as set forth in claim 1 wherein the second polyol comprises polyether polyol comprising co-polymerized styrene and acrylonitrile.

52. A method as set forth in claim 1 wherein the second polyol comprises polyether aromatic amine polyol.

53. A method as set forth in claim 19 wherein the second polyol comprises polyether polyol comprising co-polymerized styrene and acrylonitrile.

54. A method as set forth in claim 19 wherein the second polyol comprises polyether aromatic amine polyol.

IX – Evidence Appendix

None

X – Related Proceedings Appendix

None